

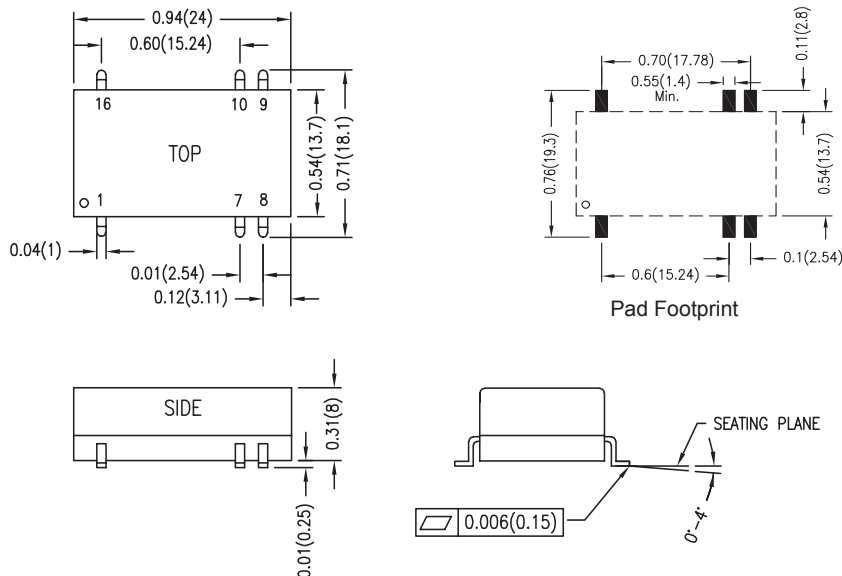
- Efficiency up to 81%
- 1500VDC Isolation
- 2:1 Input Range
- MTBF > 1,000,000 Hours
- Low Ripple and Noise
- CSA Approved
- RoHS Compliant



## 2 Watt SMN Single and Dual Series



Model Number	Voltage			Current				Reflected Ripple Current mA (Typ.)	Input Overvoltage (1000ms) Max (VDC)	Efficiency @ Max Load (%, Typ)	Capacitive Load Max (Dual each output)
	Input		Output	Input		Output					
	Nom. (VDC)	Range (VDC)	(VDC)	@ No Load (mA)	@ Max Load (mA)	Min (mA)	Max (mA)				
SMN2H5S3R3	5	4.5 - 9	3.3	40	471	125	500	100	11	70	2200 µF
SMN2H5S5	5	4.5 - 9	5	40	548	100	400	100	11	73	1000 µF
SMN2H5S12	5	4.5 - 9	12	40	534	42	167	100	11	75	170 µF
SMN2H5S15	5	4.5 - 9	15	40	582	33	134	100	11	73	110 µF
SMN2H5D5	5	4.5 - 9	±5	40	667	±50	±200	100	11	64	470 µF
SMN2H5D12	5	4.5 - 9	±12	40	615	±21	±83	100	11	69	100 µF
SMN2H5D15	5	4.5 - 9	±15	40	598	±17	±67	100	11	71	47 µF
SMN2H12S3R3	12	9 - 18	3.3	20	184	125	500	25	25	73	2200 µF
SMN2H12S5	12	9 - 18	5	20	217	100	400	25	25	77	1000 µF
SMN2H12S12	12	9 - 18	12	20	209	42	167	25	25	80	170 µF
SMN2H12S15	12	9 - 18	15	20	220	33	134	25	25	80	110 µF
SMN2H12D5	12	9 - 18	±5	20	242	±50	±200	25	25	73	470 µF
SMN2H12D12	12	9 - 18	±12	20	224	±21	±83	25	25	78	100 µF
SMN2H12D15	12	9 - 18	±15	20	226	±17	±67	25	25	78	47 µF
SMN2H24S3R3	24	18 - 36	3.3	10	96	125	500	15	50	72	2200 µF
SMN2H24S5	24	18 - 36	5	10	109	100	400	15	50	77	1000 µF
SMN2H24S12	24	18 - 36	12	10	109	42	167	15	50	80	170 µF
SMN2H24S15	24	18 - 36	15	10	108	33	134	15	50	81	110 µF
SMN2H24D5	24	18 - 36	±5	10	119	±50	±200	15	50	74	470 µF
SMN2H24D12	24	18 - 36	±12	10	112	±21	±83	15	50	78	100 µF
SMN2H24D15	24	18 - 36	±15	10	110	±17	±67	15	50	80	47 µF
SMN2H48S3R3	48	36 - 75	3.3	8	49	125	500	10	100	71	2200 µF
SMN2H48S5	48	36 - 75	5	8	57	100	400	10	100	73	1000 µF
SMN2H48S12	48	36 - 75	12	8	53	42	167	10	100	79	170 µF
SMN2H48S15	48	36 - 75	15	8	55	33	134	10	100	79	110 µF
SMN2H48D5	48	36 - 75	±5	8	62	±50	±200	10	100	71	470 µF
SMN2H48D12	48	36 - 75	±12	8	57	±21	±83	10	100	77	100 µF
SMN2H48D15	48	36 - 75	±15	8	57	±17	±67	10	100	77	47 µF



Dimensions are inches (mm) unless noted

Tolerance: Inches      Millimeters  
X.XX ±0.01      X.X ±0.25  
X.XXX ±0.005      X.XX ±0.13  
Pin      ±0.002      ±0.05

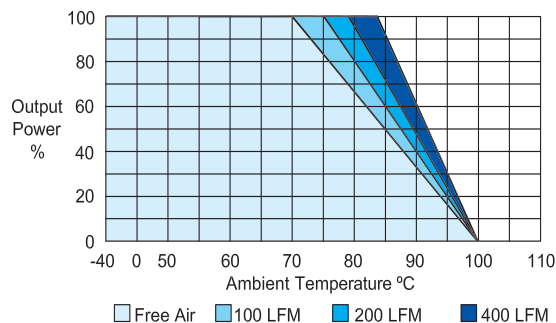
Pin Connections		
Pin	Single	Dual
1	-Vin	-Vin
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin	+Vin

See Model Selection Table for Model Specific Parameters

Input Parameters	Min	Typ	Max	Units
Reverse Polarity Input Current			1	A
Short Circuit Input Power			1500	mW
Switching Frequency		300		kHz
Input Filter	Pi Filter			
Output Parameters	Min	Typ	Max	Units
Output Voltage Accuracy		±1.0	±2.0	%
Output Voltage Balance Dual Output, Balanced Loads		±1.0	±2.0	%
Load Regulation Io = 25% to 100%		±0.5	±0.75	%
Line Regulation Vin=Min. to Max.		±0.3	±0.5	%
Ripple & Noise (20MHz)		30	50	mV P-P
Ripple & Noise (20 MHz) Over Line, Load & Temp			75	mV P-P
Ripple & Noise (20 MHz)			15	mV RMS
Over Power Protection	120			%
Transient Recovery Time 25% Load Step Change		100	300	µS
Transient Response Deviation		±3	±5	%
Temperature Coefficient		±0.01	±0.02	% / °C
Short Circuit Protection	Continuous			
General Specifications	Min	Typ	Max	Units
Isolation Voltage, 60 seconds	1500			VDC
Isolation Resistance 500VDC	1000			Mohms
Isolation Capacitance, 100kHz, 1V		250	420	pF
Operating Temperature (Ambient)	-40		+71	°C
Storage Temperature	-40		+125	°C
Humidity			95	%
MTBF MIL-HDBK-217F @25°C, Ground Benign	1000			K Hours
Leadfree Reflow Solder Process	IPC/JEDEC J-STD-020C peak temp. 245°C/10 sec.			
Moisture Sensitivity Level (MLS) Temperature	IPC/JEDEC J-STD-20 Level 2			
Cooling	Free-Air Convection			
Case Size	0.94 x 0.54 x 0.31 inches 24.0 x 13.7 x 8.0 mm			
Case Material	Non Conductive Black Plastic (UL94V-0)			
Weight	5.1g			
Agency Approvals	CSA60950 Approved			

Notes:

- Specifications typical at Ta=+25°C, resistive load, nominal input voltage, full rated output current unless otherwise noted.
- Transient recovery time is measured to within 1% error band for a step change in output load 75% to 100%.
- ConTech power converters require a minimum output loading to maintain specified regulation. Operation under no-load conditions will not damage these modules; however, they may not meet all specifications listed.
- The series has a limitation of a maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time.
- When measuring peak-to-peak output noise, use a Cout 0.47µF ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20MHz. Position the load between 2" and 2.5" from the converter.
- Water washability - It is not recommended to use water-washing process on SMN models.
- See ConTech website for Definition of Terms, Application Notes, and Test Setups and Parameters. [www.ConTech-us.com/appnotes.html](http://www.ConTech-us.com/appnotes.html).
- Specifications subject to change without notice.
- See ConTech website [www.ConTech-us.com/pdf/RoHS.pdf](http://www.ConTech-us.com/pdf/RoHS.pdf) for RoHS Statement.



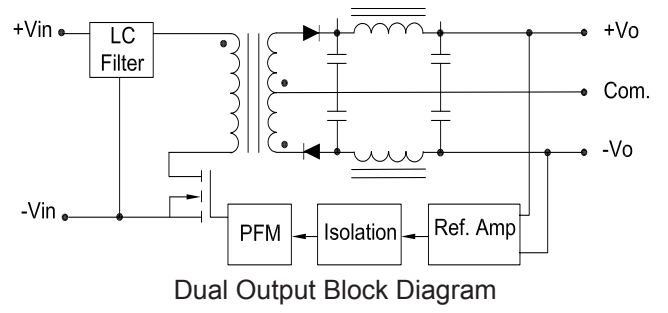
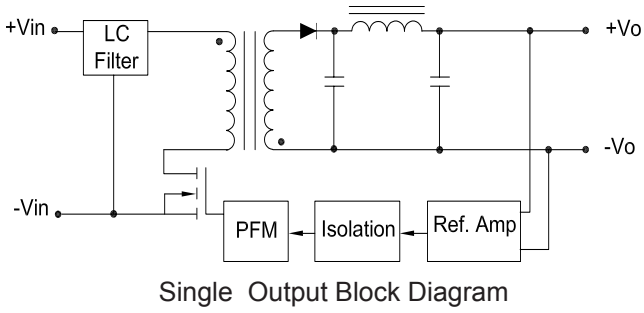
Derating Curve

To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 90°C.

Input Fuse Selection Table	
5V Input	1000 mA Slow-Blow
12V Input	500 mA Slow-Blow
24V Input	250 mA Slow-Blow
48V Input	120 mA Slow-Blow

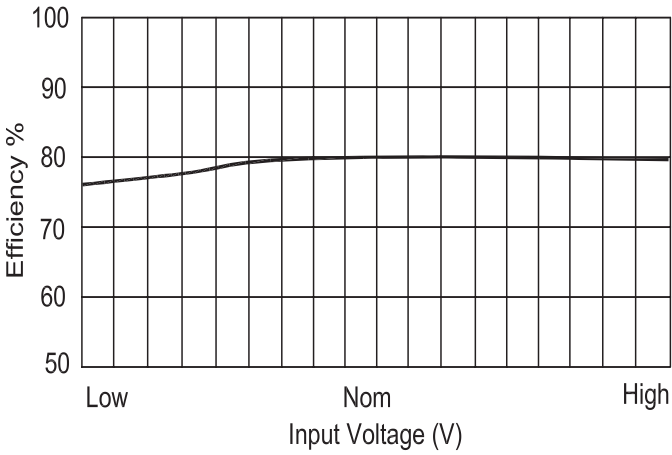
External fusing should be used for system protection due to a catastrophic failure. See ConTech website for Fusing Application Notes to determine the correct fuse.

# Block Diagrams

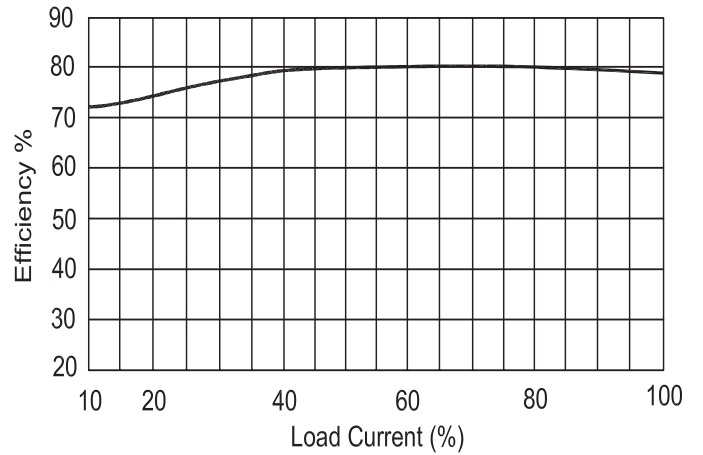


# Efficiency Curves

## Single Output

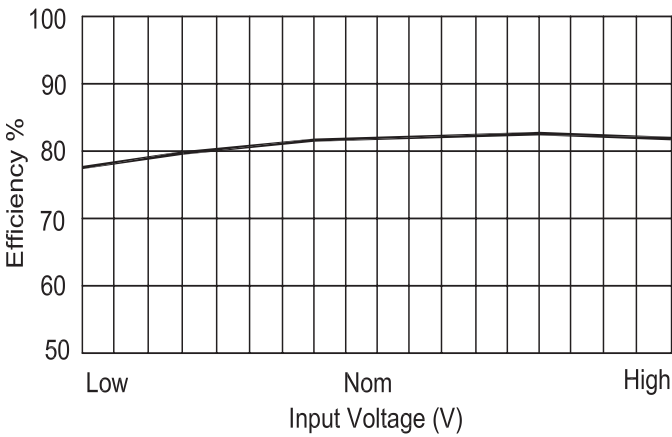


Efficiency vs Input Voltage

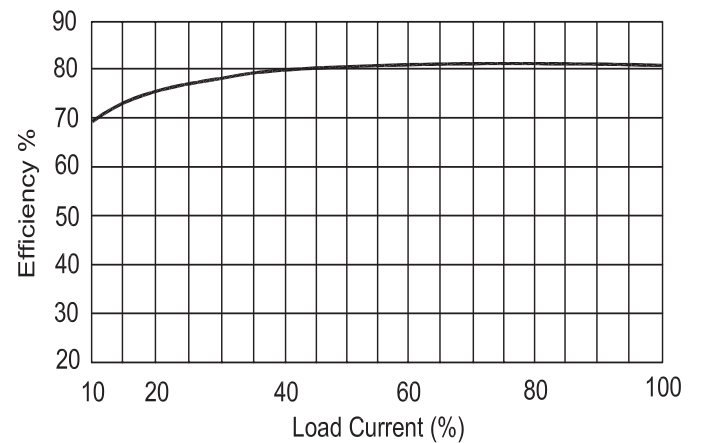


Efficiency vs Output Load

## Dual Output



Efficiency vs Input Voltage



Efficiency vs Output Load

